

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT/IB/301 and 302

*MS*

## PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

To:

Davies Collison Cave  
Level 15  
1 Nicholson Street  
MELBOURNE VIC 3000

*Rep. SR 30.11.04. ✓*

Date of mailing (day/month/year) **30 SEP 2004**

Applicant's or agent's file reference  
**12469560/TDO/FT**

**FOR FURTHER ACTION** See paragraphs 1 and 4 below

International application No.

**PCT/AU2004/000914**

International filing date

(day/month/year) **7 July 2004**

Applicant

**FLINDERS TECHNOLOGIES PTY. LTD. et al**

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/AU

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**PATENT COOPERATION TREATY**  
**PCT**

**INTERNATIONAL SEARCH REPORT**

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>12469560/TDO/FT</b>	<div style="display: flex; justify-content: space-between;"><div><b>FOR FURTHER ACTION</b></div><div>see Form PCT/ISA/220 as well as, where applicable, item 5 below.</div></div>
International application No. <b>PCT/AU2004/000914</b>	<div style="display: flex; justify-content: space-between;"><div>International filing date (<i>day/month/year</i>) <b>7 July 2004</b></div><div>(Earliest) Priority Date (<i>day/month/year</i>) <b>7 July 2003</b></div></div>
Applicant <b>FLINDERS TECHNOLOGIES PTY. LTD. et al</b>	

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of **5** sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☒ **Certain claims were found unsearchable** (See Box No. II).

3. ☒ **Unity of invention is lacking** (See Box No. III).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**A Method and agents for improving plant productivity involving endophytic actinomycetes and metabolites thereof.**

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2004/000914

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:

because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: **38 and it's dependencies in part**

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

Claim 38 and it's dependencies are directed to any metabolite derived from the microorganisms of the invention. The microorganisms claimed are likely to produce many metabolites that are common with all other related microorganisms and other non related microorganisms. These metabolites are clearly not encompassed within the inventive concept of this invention and as such claims to them are not supported. It is not possible to undertake a comprehensive search of all possible metabolites and their mimetics, chemical equivalents etc as claimed.

3. ☐ Claims Nos.:

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:  
See extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-45 in so far as they relate to an endophytic actinomycete of the strain *Streptomyces triticum* and characterised by the nucleotide sequences <400>3, 7-10, 12-14, 17 and 19-30 and methods of using same.

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2004/000914

## A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. <sup>7</sup>: C12N 1/20, A61K 35/74, A01N 63/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPIDS, CAPLUS, AGRICOLA, MEDLINE: barley, wheat, actinomycete, actinobacteria, streptomyces, endoph?, propagat?, growth, production, biodegrad?

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
XY	SARDI, P. et al (1992) "Isolation of Endophytic <i>Streptomyces</i> strains from Surface Sterilized Roots" <i>Appl. Environ. Microbiol.</i> 58(8):2691-2693. See entire document and in particular Table 2	1-45
XY	Salleh A. Antibiotics for wheat. News in Science (online) 24/08/2001 (retrieved 9/08/2004). Retrieved from the Internet: available on web.archive.org 4 October 2001 URL: <a href="http://www.abc.net.au/science/news/stories/s351442.htm">http://www.abc.net.au/science/news/stories/s351442.htm</a> see entire document	1-45
Y	EL-SHANSHOURY, A. R. (1989) "Growth Promotion of Wheat Seedlings by <i>Streptomyces atrolivaceus</i> " <i>J. Agronomy &amp; Crop Science</i> , 163:109-114. See entire document and particularly page 109 columns 1 and 2 - Introduction	1-45
PX	COOMBS, J. T. et al (Sept. 2003) "Isolation and Identification of Actinobacteria from Surface Sterilized Wheat Roots" <i>Appl. Environ. Microbiol.</i> 69(9):5603-5608. See entire document	1-45

☒ Further documents are listed in the continuation of Box C☐ See patent family annex

- \* Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search  
21 September 2004

Date of mailing of the international search report

30 SEP 2004

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE  
PO BOX 200, WODEN ACT 2606, AUSTRALIA

Authorized officer

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/AU2004/000914**

C (Continuation).

## DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	COOMBS, J. T. et al (July 2003) "Visualisation of an Endophytic <i>Streptomyces</i> Species in Wheat Seed" <i>Appl. Environ. Microbiol.</i> 69(7):4260-4262. See entire document	1-45

**Supplemental Box**

(To be used when the space in any of Boxes I to VIII is not sufficient)

**Continuation of Box No: III**

The Applicant has claimed more than one invention. Rule 13.1 of the PCT states the principle that an International Application should relate to only one invention or, if there is more than one invention, that the inclusion of those inventions in one International Application is only permitted if all inventions are so linked as to form a single general inventive concept.

Rule 13.2 of the PCT defines the method for determining whether the requirement of unity of invention is satisfied in respect of a group of inventions claimed in an International application. Unity of invention exists only when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding "special technical features." The expression "special technical features" is defined in Rule 13.2 as meaning those technical features that define a contribution which each of the inventions, considered as a whole, makes over the prior art. The determination is made on the contents of the claims as interpreted in light of the description and drawings (if any).

**Invention 1 :** An endophytic actinomycete of the strain *Streptomyces triticum* and characterised by the nucleotide sequences <400>3, 7-10, 12-14, 17 and 19-30 and methods of using same.

**Invention 2 :** An endophytic actinomycete of the species *Nocardioides albus* and characterised by the nucleotide sequence <400> 16 and methods of using same.

**Invention 3 :** An endophytic actinomycete of the species *Streptomyces galilaeus* and characterised by the nucleotide sequence <400> 2 and 15 and methods of using same.

**Invention 4 :** An endophytic actinomycete of a species of *Streptomyces* and characterised by the nucleotide sequence <400> 11 and methods of using same.

**Invention 5 :** An endophytic actinomycete of the species *Streptomyces argenteolus* and characterised by the nucleotide sequence <400> 18 and methods of using same.

**Invention 6 :** An endophytic actinomycete of the species *Microbispora* and characterised by the nucleotide sequence <400> 1 and methods of using same.

**Invention 7 :** An endophytic actinomycete of the species *Streptomyces pseudovenezuelae* and characterised by the nucleotide sequence <400> 4 and methods of using same.

**Invention 8 :** An endophytic actinomycete of the species *Streptomyces lincolnesis* and characterised by the nucleotide sequence <400> 5 and methods of using same.

**Invention 9 :** An endophytic actinomycete of the species *Streptomyces bikiniensis* and characterised by the nucleotide sequence <400> 6 and methods of using same.

Each of the above organisms are endophytic actinomycetes that are capable of improving plant productivity, but this is not novel, as noted in the following citation. Therefore this cannot be used as a special technical feature providing unity to all of the sequences.

Salleh A. Antibiotics for wheat. News in Science (online) 24/08/2001 (retrieved 9/08/2004). Retrieved from the Internet: <URL:<http://www.abc.net.au/science/news/stories/s351442.htm>>

In order to search each of the inventions, this could only be done by consideration of each of the individual organisms, thereby requiring eight separate searches. Thus, each of the organisms is considered as a single invention.